SPIXIANA	24	2	129–140	München, 01. Juli 2001	ISSN 0341–8391

Traverhyphes: a new genus of Leptohyphidae for *Leptohyphes indicator* and related species

(Insecta, Ephemeroptera)

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Molineri, C. (2001): *Traverhyphes*: a new genus of Leptohyphidae for *Leptohyphes indicator* and related species. (Insecta, Ephemeroptera). – Spixiana **24/2:** 129-140

Traverhyphes gen. nov. is established and illustrated for two neotropical species: *Traverhyphes indicator* (Needham & Murphy, 1924) new comb., and *Traverhyphes pirai*, spec. nov. The first is redescribed from imagos of both sexes, nymphs and eggs collected in Argentina. *Traverhyphes pirai* is described from male subimagos from Brazil (Rio de Janeiro). Female imagos, nymphs and eggs of *T. indicator* are described for the first time. *Traverhyphes*, gen. nov. can be distinguished from the other genera of Leptohyphidae in the male imago by its characteristic genitalia, and by the opercular gill size and form in the nymphs.

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Introduction

The family Leptohyphidae is an important component of the neotropical river fauna and is showing to be a very diverse group of mayflies, with numerous undescribed taxa. Recently, two related new genera of Leptohyphidae had been described: *Allenhyphes* Hofmann & Sartori (in Hofmann et al. 1999) and *Yaurina* Molineri (2001). In the present paper another genus is proposed: *Traverhyphes* to include *Leptohyphes indicator* Needham & Murphy (1924) and *Taverhyphes pirai*, spec. nov.

L. indicator was the sixth species described in the genus and even at that time the unusual form of the penes was remarked using this character to distinguish it from the other species of the genus (Needham & Murphy 1924: 32). Later Traver (1958) studied the holotype and some subimagos from Uruguay and redrew the genitalia noting the presence of a pair of "spear-like processes" at the base of penes that were omitted in the original description. Posteriorly Domínguez (pers. comm.) studied the holotype discovering the presence of a pair of long posterolateral projections on the styliger plate that the preceding authors did not mention.

Male imagos of the type species of the genus (*L. eximius* Eaton) were reared and show genitalia of the *peterseni*-type (Molineri, in prep) and it became clear that *L. indicator* is not congeneric with this species.

In the present paper a new genus is described for *Leptohyphes indicator* and a related new species. New specific description and drawings are given for *L. indicator*, including for the first time the female, eggs and nymphs.

Collections from other localities in South America show that *Traverhyphes* is a widespread group. Almost all the material was collected in light traps and is represented only by subimagos, one of these species (Brazil, Rio de Janeiro) is described and illustrated for its interesting male genitalia.

Terms used for thoracic description and discussion are from Kluge (1992).

Traverhyphes, gen. nov.

Figs 1-45

Type species. *Leptohyphes indicator* Needham & Murphy (1924: 33), original designation.

Species included: *T. indicator* (Needham & Murphy, 1924) comb. nov. and *T. pirai*, spec. nov.

Etymology. The genus is dedicated to Jay R. Traver whose work is the base for the present paper and other studies in Leptohyphidae, "-hyphes" for a common termination in generic names of the family.

Description

Imago. Length of male: body: 3.4-3.8 mm; fore wings: 3.3-3.9 mm; hind wings: 0.60-0.78 mm. Length of female: body: 4.0-5.0 mm; fore wings: 4.3-4.9 mm.

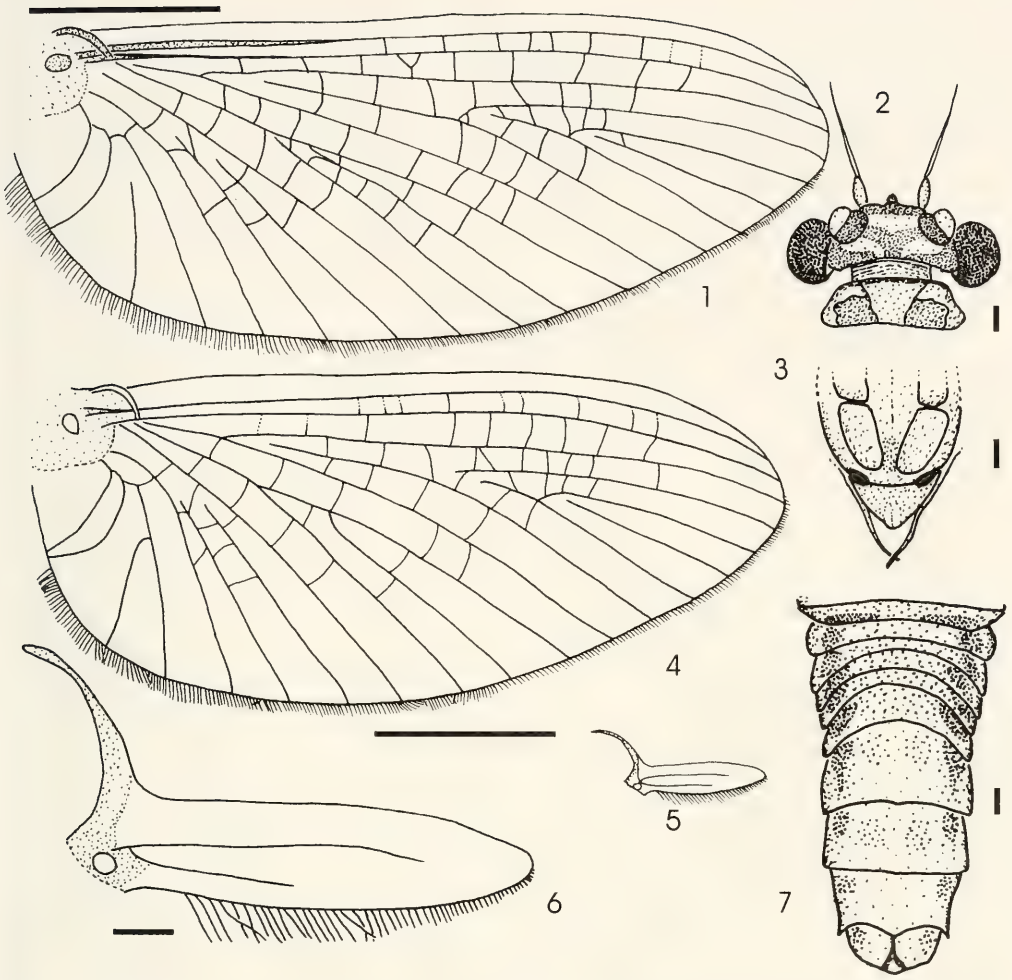
Head (Fig. 2). Eyes of male separated by a distance of 3 × diameter of an eye, eyes of female by 4 × diameter of an eye; lateral ocelli large, 0.7 × diameter of an eye; median ocellus small; occiput with a pair of small circular sclerites behind lateral ocelli. Antennae: pedicel 2.5 × length of scape, flagellum 3 × length of pedicel. Frontal part of head with a longitudinal crest from median ocellus to venter.

Thorax. Pronotum with sclerites on lateral ⅓, medially membraneous (Fig. 2). Mesonotum: fore mesonotal transverse invagination (FMI) deep and well marked; anterolateral corners of mesoscutellum darker than the rest, membranous filaments long (Fig. 3). Legs of male: fore and middle femora of similar length, hind femora 23-32 % longer than fore femora; fore tibiae and tarsi long, 2.2-2.4 × longer than middle tibiae+tarsi and 1.8-2.0 × longer than hind tibiae+tarsi. Legs of female: fore and middle femora of a similar length, hind femora 20-33 % longer than fore femora; fore and middle tibiae and tarsi of a similar length, hind tibiae and tarsi long, 1.2-1.3 × longer than fore tibiae+tarsi. Pair of tarsal claws of all legs dissimilar, one blunt paddle-like and the other apically hooked, except on fore legs of male, both blunt. Wings. Fore wings (Figs 1, 4) with fringed posterior margin, vein Icu1 attached at base with CuA and CuP by a cross vein, CuP attached at base with A, A and CuP ends very close on hind margin. Hind wings of male (Figs 5-6) reduced, total length of hind wings 0.17-0.20 length of fore wings, absent in female. Hind wings of male with fringed posterior margin and two longitudinal veins, with a long and curved costal projection 0.47-0.60 × length of wing.

Genitalia. Styliger plate with a pair of large posterolateral projections (Figs 8, 10, 11, 15, 38) dorsal to forceps; an additional pair of smaller projections arise from hind margin, between base of forceps (Figs 10, 15, 38, 40), from lateral view these projections are acute. Forceps (Figs 8, 10, 11, 15, 38) three-segmented, segment 1 short and stout, segment 2 long and slender, segment 3 globular and small. Penes (Figs 9, 13-14, 38, 40) with a deep but unconspicuous apical notch, penes flattened with a pair of membranous rounded lobes at apex, these lobes with small knobs as in fig. 41; lateral margins of penes sclerotized; base of penes with a sclerotized ring (Figs 13, 15), and with a pair of relatively short dorsal spines arising at the base of the apical lobes, apex of spines perforated and directed medially (Fig. 40). Male terminal filament 3.6 and cerci 2.7 × length of fore wings. Female terminal filament 2 and cerci 1.6 × length of fore wings.

Nymph (Fig. 37). Length of male: body, 3.5 mm; mesonotum, 1.3 mm; hind femora, 0.85 mm; tails, 3.2 mm. Length of female: body, 3.6-4.1 mm; mesonotum, 1.3-1.4 mm; hind femora, 0.95-1.00 mm; tails 4.2-4.7 mm. Head hypognathous, wider than long. Antennae 3-3.5 × length of head, flagellum with whorls of fine setae at articulations. Mouthparts: anteromedian emargination of labrum as in fig. 16, on ventral side with a pair of asymmetrical submedian rows of setae; mandibles as in figs. 21-22, left prosteca wider at base than right prosteca; molar region of left mandible with a notorious conical tooth (arrow on fig. 24); maxillae long and slender, suture between galea and lacinia almost absent (Figs 19-20), palpi small and bisegmented with apical setae; setae and spines as in figs 19-20; hypopharynx with asymmetrical setation at base of superlinguae, linguae subcuadrate (Fig. 23); labium (Fig. 18) covering almost completely venter of head, submentum 3 × wider than mentum, palpi three-segmented (Figs 17-18).

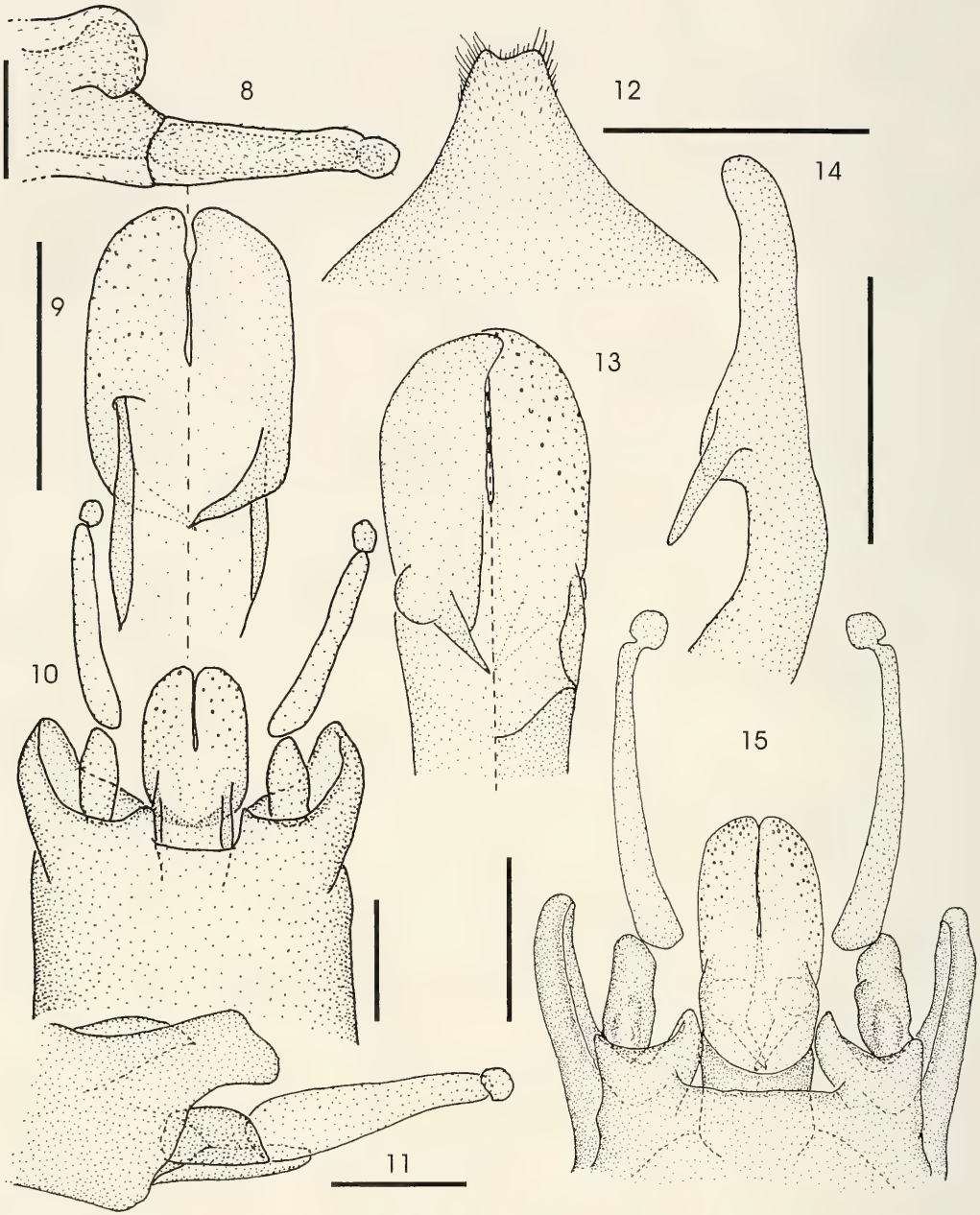
Thorax. Pronotum rectangular, slightly concave at posterolateral corners (Fig. 37). Leg proportions: maximum length/max. width of femora: fore 2.50-2.67, middle 2.73-2.83, hind 2.85-3.08; fore and middle femora with a similar length, hind femora 23-25 % longer than fore femora; middle tibiae 0.7 % longer and hind tibiae 43-50 % longer than fore tibiae; fore and hind tarsi of a similar length, middle tarsi 13-20 % shorter than fore tarsi. Legs long and slender with spines and scattered groups of fine setae as in figs 32-34; femora slightly bowed; transverse row of spines on dorsum of fore femora as in



Figs 1-7. *Traverhyphes indicator*. Imagos: **1.** Female fore wing. **2.** Head of male. **3.** Posterior half of male mesonotum. **4.** Male fore wing. **5.** Male hind wing. **6.** Detail of hindwing. **7.** Abdomen of female. Scale = 0.1 mm, except figs. 1, 4, 5 = 1 mm.

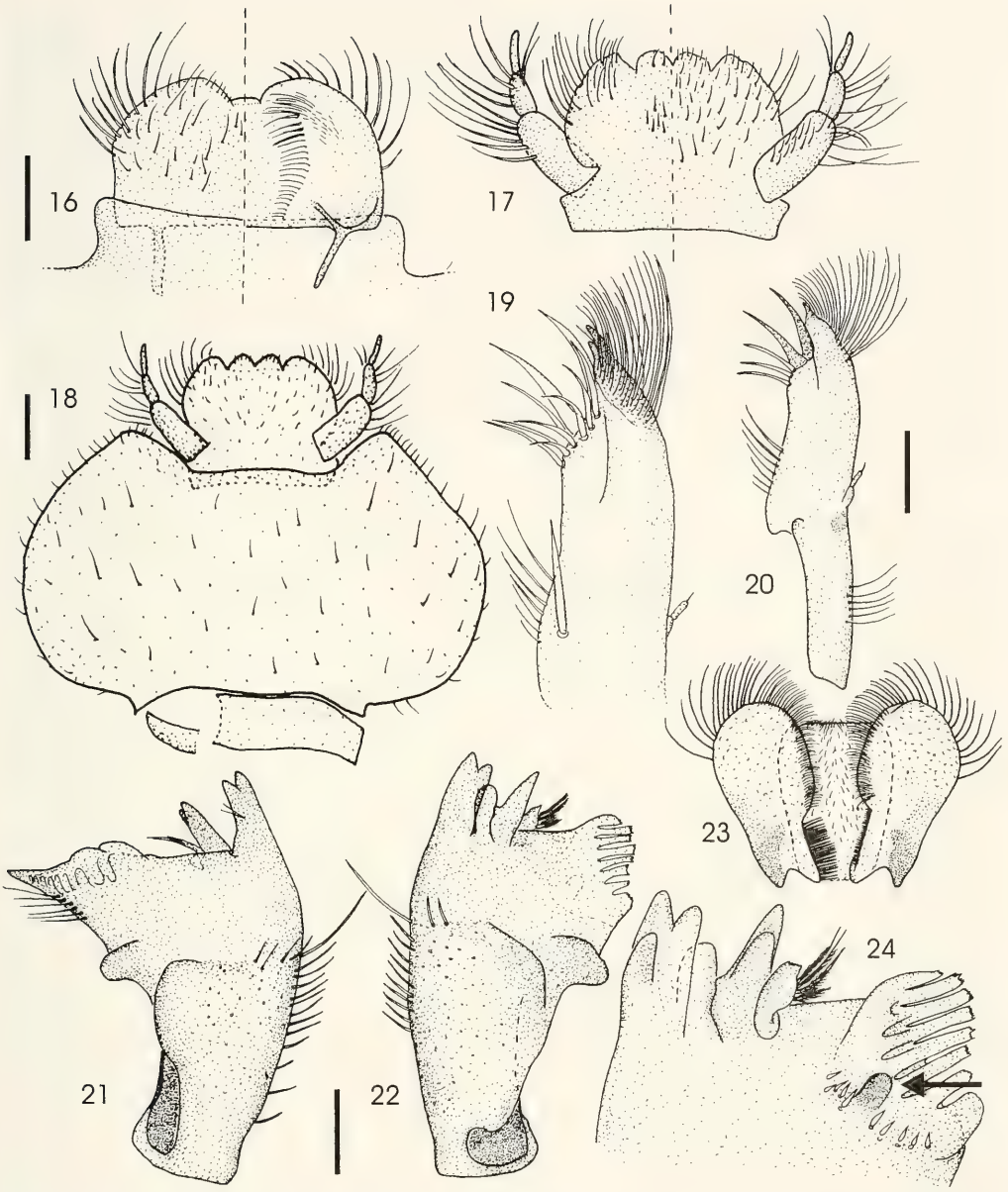
fig. 32, spines distally flattened as in fig. 31; middle and hind femora with spines on hind margin; anterior margin of tibiae of all legs with a pair of parallel rows of spines, distal spines of fore tibiae pectinated (Fig. 35); middle and hind tibiae with an additional row of spines on hind margin (Figs 33-34); fore margin of tarsi of all legs with a row of spines, cuticle of basal ½ of all tarsi darker than the rest. Tarsal claws (Fig. 36) of all legs with a marginal row of 9 denticles at basal ½, a pair of distal asymmetrical rows of denticles (4-6 submarginal denticles on one side and 1 on the other); with a subapical setae and with a pair of short setae on basal ½ of hind margin as in fig. 36.

Abdomen. Segment II laterally expanded forming the articulation of operculate gill; segments III-VII laterally expanded forming a protective floor for the gills, lateral processes rounded on segments III-VI but forming a posterolateral projection on VII; posterolateral spines present on segments VIII-IX. Terga III-VI with few small spines around gill border, terga VII with groups of long spines forming a diagonal row at each side posteriorly to apex of gills. Gills: gill of abdominal segment II (Figs 25-26) formed by an opercular dorsal lamella, ovoid and slightly curved distally, and by a pair of smaller ventral lamellae; these lamellae are dissimilar, the inferior is larger, as long as opercular lamella, and protect remaining gills from down side; opercular lamella with a pair of dorsal ribs, on ventral margin



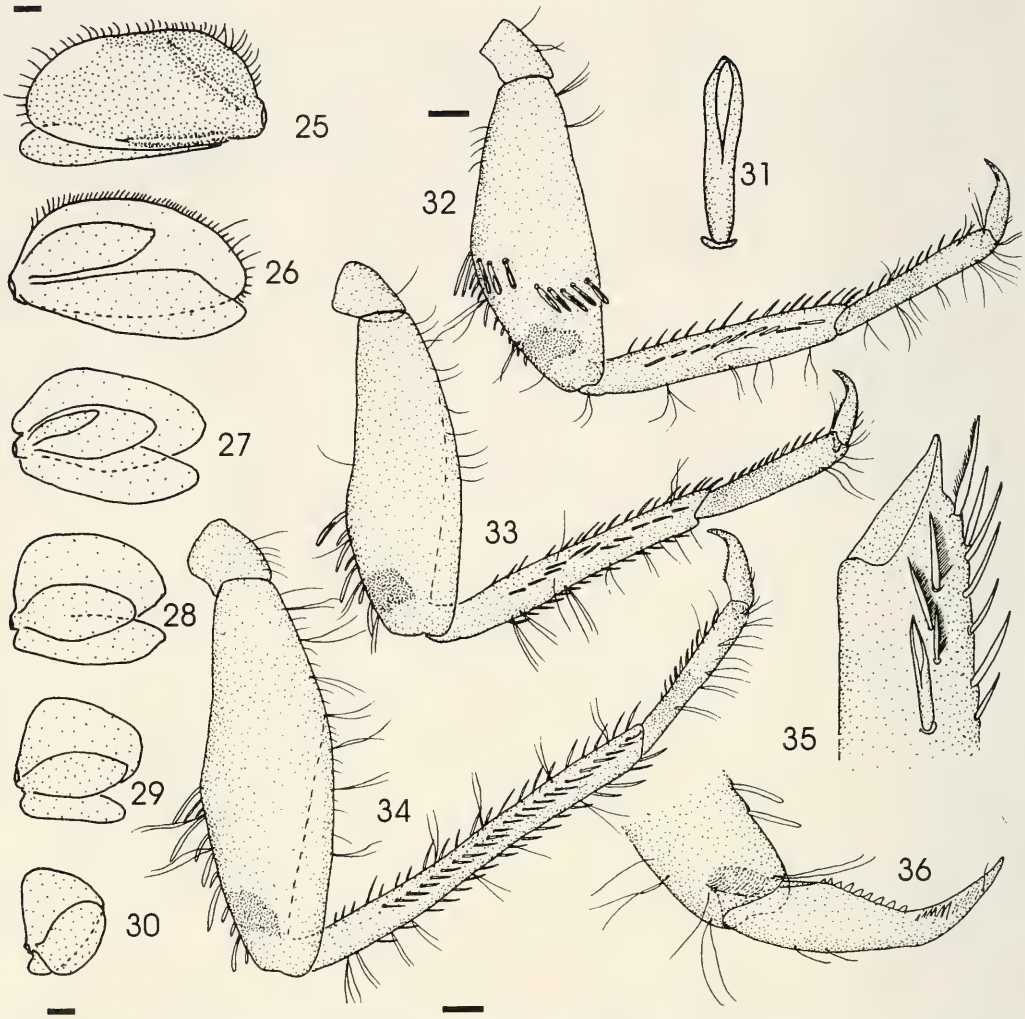
Figs 8-15. *Traverhyphes pirai*. Imagos: **8.** Genitalia, l.v. (lateral view). **9.** Detail of penes, left v.v. (ventral view), right d.v. (dorsal view). **10.** Genitalia, v.v. *Traverhyphes indicator*: **11.** Genitalia, l.v. **12.** Dorsal projection of penes, d.v. **13.** Detail of penes, d.v. at left, v.v. at right. **14.** Penes, l.v. **15.** Genitalia. v.v. Scale = 0.1 mm.

and near anterolateral border (Fig. 25). Gills III formed by four lamellae (Fig. 27), gills IV-V by three lamellae (Figs 28-29) and gills VI by two lamellae (Fig. 30). Terminal filament 10-20 % longer than body and 30 % longer than cerci, both with whorls of long spines at articulations.



Figs 16-24. *Traverhyphes indicator*. Nymph: **16.** Labrum. d.v. at left, v.v. at right. **17.** Detail of mentum, d.v. at left, v.v. at right. **18.** Labium, v.v. **19.** Detail of maxilla, v.v. **20.** Maxilla, d.v. **21.** Right mandible, d.v. **22.** Left mandible, d.v. **23.** Hypopharynx, d.v. **24.** Detail of apex of left mandible, v.v. Scale = 0.1 mm.

Eggs. Form: oval, one polar cap present (Fig. 42). Chorionic sculptures: polygonal and semicircular overlapping plates (Figs 42-43). Attachment structures: a single polar cap and numerous KTC (Knob Terminated Coiled Threads) distributed around egg surface (Figs 42-44). Micropyle: one per egg, located near the uncapped pole (Figs 42-43).



Figs 25-36. *Traverhyphes indicator*. Nymph: **25.** Gill of abdominal segment II, d.v. **26.** Same, v.v. **27.** Gill III, v.v. **28.** Gill IV, v.v. **29.** Gill V, v.v. **30.** gill VI, v.v. **31.** Fore femoral spine (detail). **32.** Fore leg, d.v. **33.** Middle leg. **34.** Hind leg. **35.** Apex of fore tibiae (detail). **36.** Fore tarsal claw (detail). Scale = 0.1 mm.

Discussion

Male genitalia of *Traverhyphes* shows many interesting characters: penes with a pair of conical spines on the dorsum (Figs 9, 13, 14, 40) near the base and with an accessory dorsal projection between penes and cerci. This projection is more or less pyramidal with setae at the tip (Figs 12, 39), and seems to continue with penes base. In the original description and subsequent emendations by Traver (1958) nothing is said about this pyramidal projection, and the same applies to a pair of long posterolateral projections of the styliger plate present in the holotype (Domínguez, pers. com.). These features clearly separate this genus from all other Leptohyphidae known from adults.

The nymphs of *Traverhyphes* do not match with any of the published nymphal descriptions. *Traverhyphes* nymphs share many characters with *Leptohyphes edmundsi* Allen and a related undescribed species collected in the same localities (Misiones, Argentina), differing from them mainly in coloration and opercular gill size and form. *Traverhyphes indicator* is not congeneric with the other two species because of the dissimilarity in male genitalia (Molineri, in prep.) and others characters discussed below.

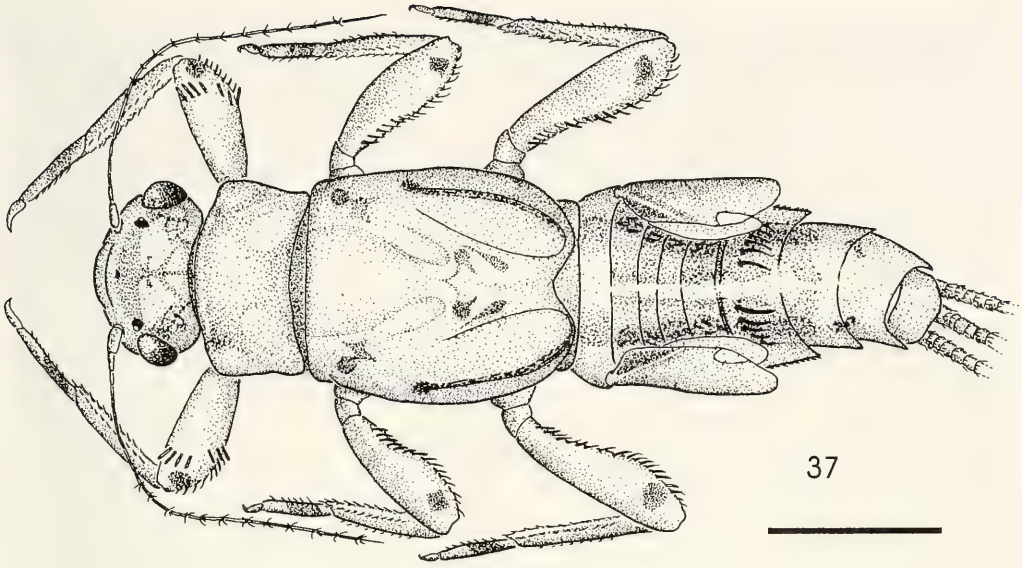


Fig. 37. *Traverhyphes indicator* nymph, dorsal view. Scale = 1 mm.

Kluge (1992) proposed some thoracic characters defining imagos of *Leptohyphes*. Almost all of them appear in a similar form in *Traverhyphes*: mesonotum with distinct transverse mesonotal suture, posterior scutal protuberances slightly divergent posteriorly and disposition of sutures on lateropostnotum of mesothorax. These character states are shared by many leptohyphid genera (except *Tricorythodes*) invalidating their use to define the genus *Leptohyphes*.

The basic structures of the egg of *T. indicator* are similar to those described for other members of the family (e.g. Koss 1968, Koss & Edmunds 1974, Kluge 1992), polar cap seems "type I" of Koss & Edmunds (1974), the chorion is sculptured with overlapping plates and a single micropyle is present near the uncapped pole. Eggs of *Traverhyphes* can be distinguished from the other described eggs of the family by the form and disposition of chorionic plates (Figs 42-43) and form of KTC (length of pedunculated part and radial disposition of fibers on the terminal knob, figs 42-44).

Imagos of *Traverhyphes* can be separated from the other members of Leptohyphidae by the following combination of characters: 1. posterolateral borders of styliger plate extended posteriorly (Figs 8, 10, 11, 15, 38); 2. hind margin of styliger plate with a pair of acute projections near the base of forceps (Figs 15, 38, 40); 3. forceps three-segmented (Figs 10, 15, 38); 4. penes almost completely fused, dorsoventrally flattened and with a pair of dorsal or laterodorsal conical spines (Figs 9, 13, 14, 38, 40); 5. dorsal projection extending from base of penes (Figs 12, 39); 6. basal ⅓ of penes forming a ring distinctly sclerotized (Fig. 13); 7. lateral margins of penes sclerotized (Figs 9, 13); 8. hind wings present in males, absent in females; 9. membranous processes of mesoscutellum long and slender (Fig. 3). Nymphs: 1. abdominal gills present on segments II-VI (Figs 26-30); 2. abdominal gill II ovoid and with a pair of ventral lamellae as in figs 25-26; 3. gills of segments III-VI as in figs 27-30; 4. maxillary palpi reduced, bisegmented with apical setae (Figs 19-20); 5. submentum enlarged (Fig. 18); 6. fore femora with a transverse row of relatively long spines (Figs 31-32); 7. middle and hind femora without transverse row of setae at base (Figs 33-34); 8. tarsal claws as in fig. 36.

***Traverhyphes indicator* (Needham & Murphy), comb. nov.**
Figs 1-7, 11-45

Leptohyphes indicator Needham & Murphy, 1924: 33, pl. 7, figs 77-78 (male); Lestage 1931: 60; Navás 1931: 322; Traver 1958: 500, figs 3, 17, 23 (male); Hubbard 1982: 274; Domínguez 1984: 103; Domínguez et al. 1994: 99, lam. 28, figs 1-3; Molineri 2001.

Description

Male imago (in alcohol). Length: body: 3.5-3.8 mm; fore wings: 3.8-3.9 mm; hind wings: 0.65-0.78 mm. General coloration yellowish light brown. Head whitish yellow shaded with black as in fig. 2. Antennae yellowish translucent shaded with gray except flagellum translucent yellowish white.

Thorax. Lateral sclerites of pronotum yellowish shaded with black at carinae and lateral margins, membrane of the median zone whitish translucent shaded with gray; propleurae hyaline, prosternum yellowish white with brownish margins and shaded slightly with gray. Mesonotum yellowish brown except anterolateral corners, fore mesonotal transverse invaginaton and lateroparapsidal sutures brownish; and medioparapsidal sutures, region between posterior scutal protuberances (PSP) and tip of mesoscutellum yellowish white; shaded with gray on mediolongitudinal line, with a pair of blackish marks on anterolateral corners of mesoscutellum (Fig. 3). Metanotum yellowish light brown shaded with gray on hind margin. Pleural sclerites of pterothorax yellowish light brown, membranes whitish yellow; shaded with black on paracoxal suture. Meso- and metasterna with yellowish brown sclerites, median membranous zone whitish translucent shaded with gray. Legs. Coxae and trochanters of all legs yellowish shaded with gray on coxae. Femora of all legs whitish yellow with yellowish margins, with a small blackish subapical mark on dorsum. Tibiae and tarsi of all legs translucent yellowish white, shaded completely with gray on fore tibiae and fore tarsi.

Wings (Figs 1, 4-6). Membrane of fore wings hyaline slightly tinged with yellow except C and Sc areas tinged with brownish yellow, longitudinal veins brownish shaded with gray, cross veins yellowish. Hind wings (Figs 5-6) hyaline with yellowish costal projection.

Abdomen translucent whitish yellow except segments IX-X whitish yellow, shaded with black on sublateral regions of terga I-IX, heavier on segments I-VI; remaining area of terga shaded slightly with gray; median line of terga X light brownish (similar to fig. 7). Pleural folds shaded with gray, darker on segments IV-VI. Abdominal sterna translucent yellowish white. Genitalia (Figs 11-15, 38-41): styliger plate yellowish white except anterior margin yellowish and lateral margins brownish; posterolateral projections of styliger plate and forceps segment 1 yellowish translucent, remaining segments of forceps translucent yellowish white. Penes whitish translucent except dorsal pyramidal projection of penes yellowish. Cerci whitish translucent shaded slightly with gray, darker at articulations; terminal filament paler.

Female imago (in alcohol). Length: body (abdomen without eggs): 3.0-3.1 mm; fore wings: 4.3-4.4 mm. General coloration yellowish brown. Head and thorax as in male imago. Fore wings as in fig. 1. Hind wings absent. Legs as male except fore tibiae and fore tarsi, translucent yellowish white, without shading with gray. Abdomen (Fig. 7) as male imago except sternum IX yellowish white with yellowish translucent hind margin, slightly excavated apically. Tails whitish translucent.

Female subimago (in alcohol). Length: body (abdomen extended, with eggs): 4.0-5.0 mm; fore wings: 4.3-4.9 mm. Similar to imago.

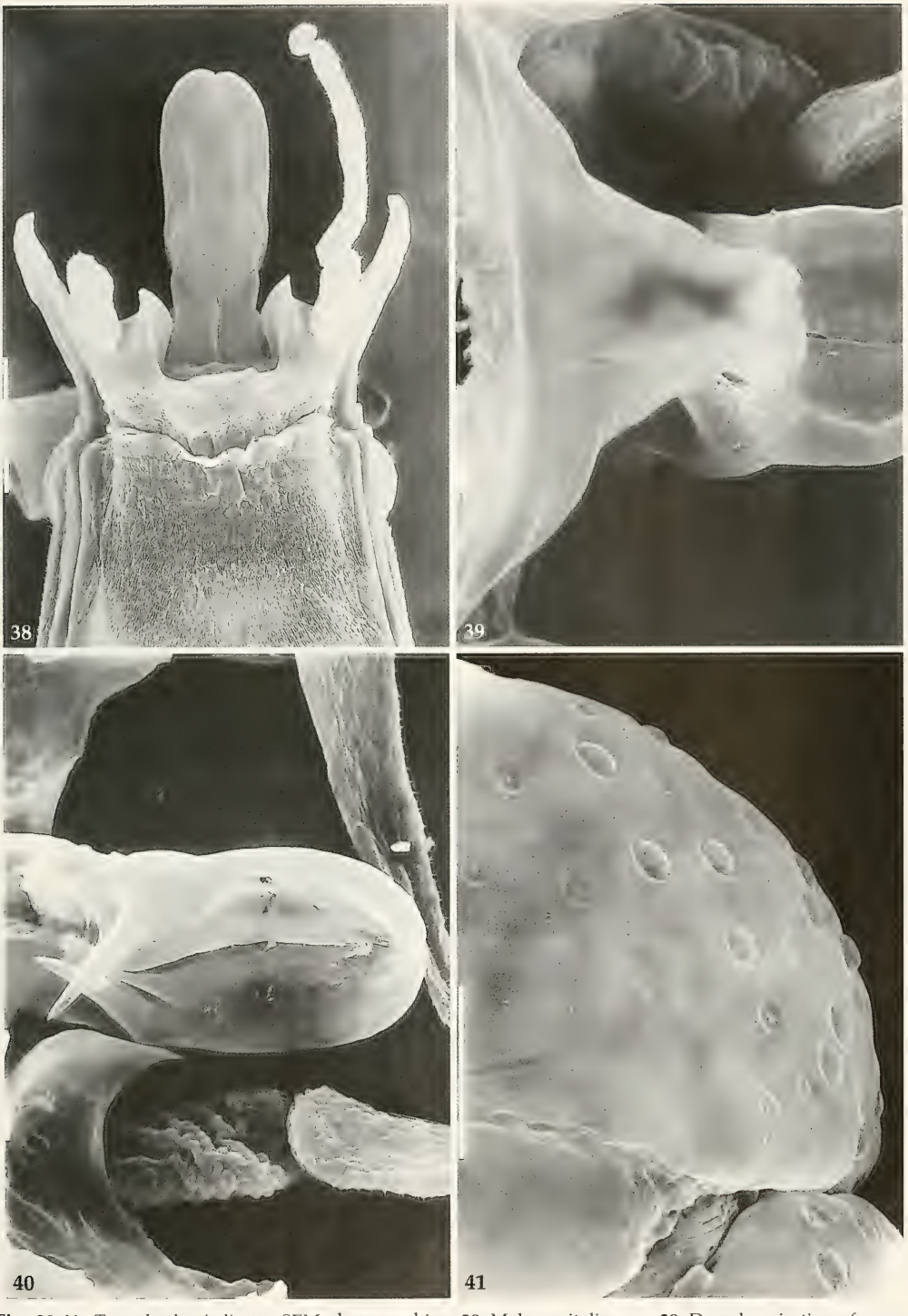
Mature nymph (in alcohol, fig. 37). Length of male: body: 3.5 mm; mesonotum: 1.3 mm; hind femora: 0.85 mm; tails: 3.2 mm. Length of female: body: 3.6-4.1 mm; mesonotum: 1.3-1.4 mm; hind femora: 0.95-1.0 mm; tails: 4.2-4.7 mm. General coloration light brownish with black markings.

Head yellowish brown shaded with black among ocelli and around antennae, occiput with grayish mediolongitudinal band and posterolateral corners. Antennae yellowish translucent. Mouthparts (Figs 16-24) yellowish shaded with gray on median zone of labium.

Thorax yellowish brown shaded widely with gray except on submedian triangular marks of pronotum; with a pair of notorious blackish ovoid marks between developing wings; developing wings yellowish translucent with blackish costal margin and black basal sclerite. Pleurae and sterna yellowish white shaded with gray. Legs whitish yellow with black subapical marks on femora (Figs 32-34); basal ½ of tarsi of all legs brownish translucent (Figs 32-34).

Abdomen yellowish brown shaded with black on anterolateral regions of terga II-IX; tergum I completely shaded with gray; shaded slightly with gray on terga II-VI, less marked on mediolongitudinal band; tergum X shaded with gray on hind margin. Abdominal sterna I-VI yellowish white, VII-IX yellowish. Gills (Figs 25-30): opercular lamellae light brown with black anteromedian margin, apical portion with depigmented maculae as in fig. 25, remaining gills translucent yellowish white. Tails yellowish translucent with whorls of long spines at articulations.

Eggs. Mean length: 182 μm; mean width: 79 μm. Color: light green, polar cap whitish. Chorion: polygonal overlapping plates near the uncapped pole, decreasing in number and becoming more or less semicircular toward the capped pole (Fig. 42). These plates sculptured with small granules on



Figs 38-41. *Traverhyphes indicator*, SEM photographies: **38.** Male genitalia, v.v. **39.** Dorsal projection of penes, d.v. **40.** Penes and base of forceps, d.v. (pyramidal projection removed). **41.** Apex of penes (right apical lobe), v.v. Scales: 38: 100 μ; 39, 40, 41: 10 μ.

thickest margin (the nearest to the uncapped pole, fig. 43). Attachment structures: a single polar cap present, formed by numerous knob terminated non-coiled threads (Figs 44-45); few knob terminated coiled threads attached between chorionic plates and on the smooth chorion rounding polar cap. These KTC increase in number toward capped pole, and consist in a basal pedunculated part formed by numerous coiled fibers located radially in the distal part, forming the knob (Fig. 43). Micropyle: one per egg, located near the uncapped pole (Fig. 42), circular or pentagonal in form and delimited by five chorionic plates (Fig. 43).

Observations. Posterolateral projections of styliger plate vary in size between subimagos and imagos, reaching its definitive form after ecdisis to imago. Two male imagos have dark spots on some longitudinal veins of fore wings, and other two male imagos have posterolateral projections of styliger plate smaller than the rest.

Life cycle associations. Nymphs and adults are associated by reared nymphs of both sexes.

Material. Holotype ♂ imago, deposited in Cornell University, Ithaca, New York, USA; drawings from wings and genitalia made by E. Domínguez. - Other material: 5♂♂, 1♀ imagos from ARGENTINA, Misiones, PN Iguazú, Puerto Canoas, 26-XI-998, at light, Domínguez, Molineri & Nieto Col.; 50♂♂, 25 nymphs from ARGENTINA, Misiones, PP Urugua-í, RP 19, A° Uruzú, 23-24-XI-1998, Domínguez, Molineri & Nieto Col.; 1♂ imago, 1♀ subimago, both reared, from ARGENTINA, Misiones, PP Urugua-í, RP 19, A° Uruzú, 7-XII-1999, Molineri Col.; 9♀♀ imagos from ARGENTINA, Misiones, Dpto. San Pedro, Confluencia Ríos Alegría y Piray-Guazú, 22-23-XI-1998, Domínguez et al. Col. Other localities in Misiones: Río Cuñá-Pirú, A° Mártires (C° Azul), Bonpland, San Vicente, El Soberbio. All the material is deposited in the collections of Instituto- Fundación Miguel Lillo, Tucumán, Argentina.

Discussion. *T. indicator* can be distinguished from *T. pirai* by the following combination of characters: 1. abdominal terga shaded with black at lateral margins, median band paler (Fig. 7); 2. penes with a similar width along their length (Figs 13, 38); 3. origin of peneal spines dorsal (Figs 13-14, 40).

Traverhyphes pirai, spec. nov.

Figs 8-10

Etymology. "Pirai" from the name of the river where the material was collected.

Description

Male subimago (in alcohol). Length: body: 3.4-3.5 mm; fore wings: 3.3-3.6 mm; hind wings: 0.60-0.73 mm. General coloration yellowish-orange. Head yellowish white shaded completely with gray except on a pair of small circular marks behind lateral ocelli; venter of head paler, not shaded with gray except laterally. Antennae: scape and pedicel whitish translucent shaded with gray [flagellum broken off and lost]. Thorax. Pronotum medially whitish translucent shaded with gray except on a pair of sublateral longitudinal bands and small scattered dots; lateral ⅓ yellowish-white shaded with gray on carinae and lateral margins; propleurae and prosternum whitish-translucent shaded with gray. Mesonotum yellowish-orange, slightly paler between medioparapsidal sutures; anterolateral margins heavy sclerotized, orangeish-brown; shaded with light gray on carinae and between posterior scutal protuberances; anterolateral corners of mesoscutellum with a small grayish mark; membranous filaments whitish translucent. Mesopleural sclerites yellowish, with whitish membranes, shaded with gray on carinae; mesosternal sclerites orangeish-yellow, median membrane whitish-translucent shaded with gray. Metanotum yellowish shaded with gray on carinae and margins; metapleurae and metasternum whitish-yellow. Legs. Coxae and trochanters of all legs yellowish-white shaded with gray dorsally; remaining segments of all legs whitish-yellow, femora of all legs with a subapical blackish mark on dorsum; fore leg shaded completely with gray, remaining legs not shaded. Wings. Membrane of fore and hind wings whitish translucent, longitudinal veins yellowish white. Abdomen translucent yellowish-white shaded with gray dorsally; shaded more marked on longitudinal submedian bands on terga II-V and on anterior margin of VI; abdominal sterna shaded with gray only at lateral margins. Genitalia (Figs 8-10): styliger plate yellowish-white; forceps and penes whitish translucent. Tails whitish-translucent.

Female and nymph. Unknown.

Figs 42-45. *Traverhyphes indicator* eggs, SEM photographies: **42.** General view of egg. **43.** Detail with micropyle and KTC. **44.** Basal part of polar cap and KTC near pole. **45.** Detail of polar cap. Scales: 42: 100μ; 43, 44: 10 μ; 45: 1.0 μ.

Material. Holotype and 5 paratypes ♂ subimagos from: Brazil, Rio de Janeiro, Mun. Rio Claro, Rio Pirai, 8-IV-1977, CM & OS Flint Jr, Cols. Holotype and three paratypes deposited in National Museum of Natural History, Smithsonian Institution, Washington D. C., USA; two paratypes deposited in Instituto-Fundación Miguel Lillo, Tucumán, Argentina.

Discussion. Male subimagos of this species can be differentiated from *T. indicator* by the following combination of characters: 1. abdominal terga shaded uniformly with gray, darker on a pair of submedian longitudinal lines on terga I-VI; 2, apical half of penes wider than basal part (Fig. 9); 3. origin of peneal spines dorsolateral (Fig. 9). Subimaginal male genitalia of *T. indicator* does not change when molting to imago, except for the relative length of the posterolateral proyections of styliger plate. For this reason already at the stage of subimago this two species are readily distinguishable.

Acknowledgments

The present paper was completed while the author was supported by a fellowship from the National Council of Scientific Research of Argentina (CONICET). I want to thanks Eduardo Domínguez for critical reading of the manuscript.

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